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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/551,271	09/28/2005	Masahiro Tada	09792909-6378	4665
26263 7590 11/29/2007 SONNENSCHN NATH & ROSENTHAL LLP P.O. BOX 061080 WACKER DRIVE STATION, SEARS TOWER CHICAGO, IL 60606-1080			EXAMINER TSAI, H JEY	
			ART UNIT 2812	PAPER NUMBER
			MAIL DATE 11/29/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/551,271

Applicant(s)

TADA ET AL.

Examiner

H.Jey Tsai

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brunner 2005/0221528, previously cited, in view of Wolf, vol. 1, pages 331-332, newly cited.

Brunner discloses a method for manufacturing a micromachine including an oscillator, comprising:

a step of forming a sacrifice layer 209, 205 around a movable portion of the oscillator 206; para. 26, 37-49, figs 3a-3f,

the sacrifice layer 209, 205 comprising silicon oxide, para. 40, 38,

a step of covering the sacrifice layer with an overcoat film 211,

followed by the formation of a penetrating hole 213 reaching the sacrifice layer 209, 205 in the overcoat layer 211;

a step of performing sacrifice-layer etching for removing the sacrifice layer 209, 205 using the penetrating hole 213 in order to form a space around the movable portion 206; and a step of performing a film-formation treatment at a reduced pressure (vacuum and sputtering) following the sacrifice-layer etching so as to seal the penetrating hole, para.46.

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regarding claim 2, wherein the method is applied to a micromachine having means for driving oscillation in the oscillator, para. 26, 46.

regarding claim 5, wherein the film-formation treatment at a reduced pressure is a film-formation treatment by sputtering, para. 46.

The difference between the references applied above and the instant claim(s) is: Bruner teaches at para. 46, 40 and 38, using sputtering aluminum for film-formation treatment and doped silicon oxide for sacrificial layer 209 and 205 but does not teach using aluminum copper or aluminum silicon material. However, Wolf teaches at vol. 1, pages 331-332, aluminum alloy including Al-Cu and Al-Si are more frequently used than pure aluminum in microelectronic application because they possess enhanced properties for interconnect requirement. Bruner also teaches at para. 10, preferably the silicon oxide is silicon dioxide; when silicon oxide is referred to in this document, silicon dioxide is the most preferred embodiment, although conventional, doped and/or non-stoichiometric silicon oxides are also contemplated.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above Bruner's teachings' process by using frequently used aluminum alloy including aluminum copper or aluminum silicon for metal film formation as taught by Wolf et al. because both aluminum copper and aluminum silicon possess enhanced properties for interconnect requirement in microelectronic application so that all metal layers in the microelectronic mechanical device would have enhanced aluminum property.

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Claims 3-4 are rejected under 35 U.S.C 103 as being unpatentable over Bruner as applied to claims 1-2 and 5 above, and further in view of Lin et al. 5,589,082 or Schmid 6,761,068, previously cited.

The difference between the references applied above and the instant claim(s) is: Bruner in view of Wolf et al. teaches forming a MEMS device having an oscillator but does not teach the means for driving the oscillation. However, Lin et al. teaches at col. 1, lines 25-31, means for driving oscillation is piezoelectric and at col. 1, lines 60-65, means for driving oscillation is electrostatic force. Lin et al. also teaches at fig. 7Q-7S, col. 11, lines 17-37, a step of forming a sacrifice layer 452 around a movable portion of the oscillator 450, a step of covering the sacrifice layer with an overcoat film 456, followed by the formation of a penetrating hole 458 reaching the sacrifice layer 452 in the overcoat layer, a step of performing sacrifice-layer etching for removing the sacrifice layer 452 using the penetrating hole 458 in order to form a space around the movable portion 450; and a step of performing a film-formation treatment at a reduced pressure following the sacrifice-layer etching so as to seal the penetrating hole. Schmid teaches at col. 4, lines 1-12, means for driving oscillation are static electric or piezoelectric.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above references' teachings by using static electric or piezoelectric for driving oscillation as taught by Lin et al. or Schmid because static electric and piezoelectric would cause the movable portion of the device to oscillate so that a oscillation is formed.

Conclusions

Applicant's arguments filed on Oct. 31, 2007 have been fully considered but they are not persuasive. Because using aluminum copper and aluminum silicon are well known in the art that they are the most frequently used in the microelectronic application as taught by Wolf et al. as set forth above.

And, KSR international v. Teleflex, US Supreme Court, April 30, 2007 stated: Granting patent protection to advances that would occur in the ordinary course without real innovation retards progress and may, in the case of patents combining previously known elements, deprive prior inventions of their value or utility. When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under §103.

When a work is available in one field, design incentives and other market forces can prompt variations of it, either in the same field or in another. If a person of ordinary skill in the art can implement a predictable variation, and would see the benefit of doing so, §103 likely bars its patentability. Moreover, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would

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improve similar devices in the same way, using the technique is obvious unless its actual application is beyond that person's skill.

It is common sense that familiar items may have obvious uses beyond their primary purposes, and a person of ordinary skill often will be able to fit the teachings of multiple patents together like pieces of a puzzle.

In *Sakraida v. AG Pro, Inc.*, 425 U. S. 273(1976), the Court derived from the precedents the conclusion that when a patent simply arranges old elements with each performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious. *Id.*, at 282. The principles underlying these cases are instructive when the question is whether a patent claiming the combination of elements of prior art is obvious. When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, §103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to H. Jey Tsai whose telephone number is (571) 272-1684. The examiner can normally be reached on from 7:00 Am to 4:00 Pm., Monday thru Thursday.

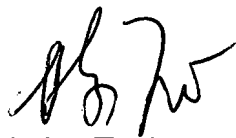
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael S. Lebentritt can be reached on (571) 272-1873.

The fax phone number for this Group is 571-273-8300.

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hjt

11/23/2007

A handwritten signature in black ink, appearing to read 'H. Jey Tsai'.

H. Jey Tsai
Primary Examiner
Patent Examining Group 2800